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★ THIS MONTH ★

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WELLINGTON BRINK
Editor

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COURSE IN LAND JUDGING.—Special training in land judging was recently undertaken by San Luis Obispo high school students on the California State Polytechnic college farm.

Junior and senior students, under direction of their agricultural instructor Jim Williams and cadet teachers Maurice Fleming and Michael Furst, observed Dr. Logan Carter, soils department head, demonstrate methods of land judging.

The object of the course was to develop the ability to select and judge land and use it according to its capabilities. Observers had previously studied basic principles of soils in their high school agricultural classes.

During the special demonstration a 5-foot pit was dug to show soil properties. Score-card evaluation sheets, similar to those used in Future Farmer of America livestock judging competition, were used.

FRONT COVER.—A view of Stone Valley, a complete 2,000-acre watershed, Dalmatia, Pa. At the time this picture was taken, conservation practices were about 90 percent established: steep hillsides in pasture, rim of valley in timber, sides of valley farmed in strips under a 4-year rotation of corn, oats, wheat and hay, diversion ditches and grassed waterways where needed. Dalmatia is a prosperous community of Pennsylvania Dutch. Photograph by Hermann Postlethwaite.

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The Story of a Wise and Dedicated Man

Houser Davidson's home, Peach County, Ga.

His acres are well legumed and his duty to his fellow man is well discharged. Houser Davidson feels that conservation farming not only makes better soil but also better citizens.

By LOUIS REID

LAST summer a group of Central European exchange students stopped for a look at soil conservation work on the Houser Davidson farm 6 miles east of Fort Valley in Peach County, Ga.

Through their interpreter, Davidson told them he used conservation methods both because they made him money and because he felt it was the right way to farm if you had any sort of regard for your soil. He went on to tell them something of his yields—he averaged 100 bushels of oats an acre for one year on 190 acres, excellent for his section.

One of the students, interested in soil science, kept scooping up handfuls of the rich red sandy loam and sifting it through his fingers, all the while shaking his head and wrinkling his forehead.

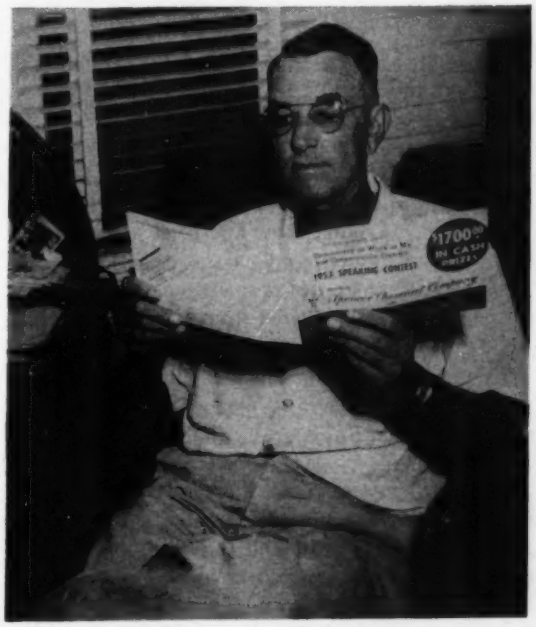
Finally he turned to the interpreter, spoke rapidly in German. "He wants to know," Davidson was told, "why—since your soil conservation work makes your soil so good and gives you such high yields—your country doesn't make all farmers operate as you do."

Davidson whirled on the youth. "Tell that young man," he instructed, "that in this country we think a lot more of our freedom to farm as we want to than we do of our soil."

We heard the story and decided Houser Davidson was a man to know; we went to Central Georgia to see him. After we toured the farm we shared the young exchange student's conviction that everyone could profit from farming as Davidson does . . . if the job is done voluntarily.

Davidson, a tall, taut 53-year-old man, is coming pretty close to an ideal. He's farming according to the capabilities of his soil. He's putting every acre to the best permanent use he knows for it.

Davidson has 1,100 acres of nearly level land, highly productive. Those acres are capable of making him more profit year in and year out in



Houser Davidson in his office.

Note.—The author is associate editor, Country Gentleman, Philadelphia, Pa.

row crops than in any other use, so that's what he grows on them.

He has 265 scattered acres that aren't cultivated. They don't and can't pay their way in cultivation. They're too sandy or too sloping. They wash away if plowed frequently. They have lost money every year Davidson has tried to crop them.

"I keep rigid books," he says, "and I found out that I had to make 30 bushels of corn an acre to pay expenses. My 265 acres weren't making that much, so along about 1941 I quit cultivating them. I didn't give it much thought at the time, but that acreage was so gullied that it was awfully hard on the men and mules."

Davidson's concern then was primarily for his row crop land, not for the land he had lying idle. "I concentrated on my good land. I knew I could make money there," he explains. "My boy, Bill, was a little fellow at the time and I was determined to run this place so that I'd have enough to give him a good education. I wanted him to go into one of the professions, never to have to go through the struggle farming that I was going through."

Retiring the 265 acres, then, was a piece of defensive farm economics. "But it was soil conservation too," Davidson will tell you. "Even if we didn't use the term at the time, that's what it was.

"Later in the thirties we got interested in soil conservation as such. It was high time we did. We voted in a soil conservation district, got SCS technicians assigned here. These SCS boys helped me work up a map defining the characteristics of my land and its capabilities. I swear by that map . . . farm by it. It didn't show any need to change the way I handled my cropland, except that a few 'Saturday afternoon patches' the tenants planted in cotton needed to be retired from cultivation.

"My idle land, though, was a different story. Pasture looked like the best bet for most of it, pine timber for some. I began planting Coastal bermudagrass, Pensacola Bahia grass, kudzu and slash pines and it has paid . . . paid me every year I've had it. It's stopped my erosion. I don't have a gully on the farm. It's made me good hay. It led me into getting some beef cattle and I've made good money on them. All in all, several times I've made more money per acre on that land I once abandoned than I got from my best row cropland," he says.

Davidson thinks that real conservation is a lot more than mere soil saving. "I don't figure I've got conservation on a piece of land until I get it growing things it can grow without suffering erosion, until I get its organic matter built up and until I get enough profit from it to take care of me," he states. "That's the kind of conservation we have to have if our land is going to feed this growing nation."

He feels strongly about the soil improvement aspects of his soil conservation work, as you find from his frequent talk about humus . . . and as you see from the excellent tilth of his soil. When you seen an acre of Davidson land, you can bet it's a well-legumed acre.

To give you an idea, here's the cropping history on a field in good oats this year. "Made 90.3 bushels of oats an acre this time," says Davidson. "Had corn there last year. And the year before. Before that, oats the 8 previous years with iron peas planted in the stubble with a tiller plow and turned under green in September.

"I never burn any stubble," Davidson told us. "I'll bet this summer I've seen 10,000 acres of stubble going up in smoke. That hurts me. I couldn't afford to burn mine, wouldn't burn it if I could. I can't understand why men will butcher their land. They're just trying to go broke." Davidson is positive about that: he's a positive sort of man.

He's ruefully positive that he isn't going to harvest any more summer legume for hay. That's because of an event a couple of years back. "I planted soybeans where I was going to follow with oats in the fall," he relates. "I cut hay from half that field for soybeans. I shouldn't have. When I combined the oats the next June I made 28 bushels an acre less from the area where I'd taken the hay. I could have bought hay for less than that."

Davidson applies high rates of fertilizer. "To utilize that efficiently, I have to keep high organic content from my legume and crop residues in my soil; when I stole my own organic matter by taking that soybean hay I was robbing myself," he confesses.

He thinks organic matter pays off in other ways, too. In increasing the soil's water-holding capacity, for example: "Last summer in the drought my corn made more than most folks' because my soil had more water stored in it."

Plenty of soil-protecting mulch has been laid down by these 14-year-old pines which Davidson planted as part of his sound land use program. The trees are on Class III land, Orangeburg fine sandy loam.

Organic matter built up in land growing peaches —one of the major Davidson crops along with corn, oats and wheat—helps hold water. A spacing system Davidson devised lets his trees benefit from that water. He plants 75 trees to the acre, instead of the 100 common in his area. "It pays to conserve water just like anything else," Davidson claims. His yields appear to bear out the wisdom of his methods; his 2½-bushel-per-tree average over the past 15 years makes other growers' mouths water.

Davidson's peach orchards are planted in straight rows . . . "It's not peach land if it needs contouring, not in my country," he says. He gets around the danger of slight washing there by throwing a furrow across the slope along the tree trunks and another in the middles. Weeds grow on these low temporary "terraces" until time for another cultivation, when a new furrow goes up.

Conservation's paid Davidson, beyond any doubt. His 15-year average yields are a fourth better than top yields from much similar land nearby. He's averaged 65 bushels of oats, 40 of corn, 28 of wheat. Pasture and beef yields have been excellent.

Davidson, an intense man, conceives a positive duty to pass along to other farmers the benefits he's had from soil conservation. He has something of a dedication to that duty, is virtually a soil disciple. He's talked all but a handful of the landowners in Peach County into signing conservation plan agreements with the Ocmulgee Soil Conservation District; he's a non-paid supervisor.

Davidson is proud of this coastal bermudagrass pasture, planted in April 1951.

A fine stand of Bahia grass on some of Davidson's Class II land.

"Our districts are the only unit of government we farmers have ever had to run as we see fit. All the work we do through them is voluntary . . . and I think that's the only way we'll ever achieve a job as complex as soil conservation," Davidson says. He's a director, also non-paid, of the National Association of Soil Conservation Districts, a position requiring considerable travel and expense.

Davidson thinks what's good for his farm is good for the Nation. "I'm not satisfied with everything the way I have it now, of course," he admits. "I have my land use changes all made, but I feel that I've only just begun my soil improvement. The same thing is true of most conservation farmers here in our district.

"I'm going to keep building until I can average 100 bushels of corn in a normal year. Whatever I do, you can be sure that soil improvement will be uppermost. I'm not going to throw any of my land away by handling it so it can erode. I think too much of my land for that.

"I've had some successes; we've made some money every year since 1932. Conservation's largely responsible. Operating with the needs of my soil primarily in mind might not make as much some one year as I could make otherwise; but it's going to be awfully hard to break me while my soil's this good. I think," he says, "that having my farm in this shape makes me a better citizen than I would be if I were sticking my neck out and getting it chopped off in short-sighted farming."

In spite of the satisfaction he's had with his farm, for the past several years Davidson has been a man facing bitter disappointment.

He tells the story best himself: "Along toward the war's end I really began to realize for the first time what soil conservation had done for this farm. It had become a good enough place for anyone to live on . . . and lead a worthwhile productive life.

"I began to want more than anything in the world for my son, Bill, to take over here when he got old enough. But I was too late. Already I had guided him away from here. Bill trained to be a geophysicist, got out of school and went into that work successfully, although the Army has him right now," Davidson recounts.

Davidson realized a fine crop this year from these 4-year-old peach trees. The orchard is on Class I land, Magnolia fine sandy loam.

About here a gleam comes into Davidson's eye and the tone of his story changes. "I don't deserve it, but Bill's coming home to the farm to live! He made a trip down here and told me he'll be coming as soon as he gets out of the Army. I didn't ask him to come. I wanted him, but I thought I'd better keep my mouth shut. The decision was his. Bill said he likes geophysics fine but that he'd rather work this farm than do anything else on earth. He says he wants to carry on the soil improvement work, so I don't have any worries about how he'll get along."

You can feel the humble thankfulness as Davidson adds, "Mamie and I sure are looking forward to the day when Bill and his wife get here. I've got lots of years left in me, but I can start shifting some of the load to Bill. His coming is the one thing I've been wanting that I didn't think I could get. You know what? The good Lord is a heap more generous with a lot of us than he has any call to be."

GRASS-BASED ROTATIONS.—The use of grass-based rotations is a relatively new practice in the Southeast. But judging from results some farmers are getting with this kind of rotation, the practice is due for a rapid increase in popularity.

Heyward Brown and his son Howard planted 8.3 acres of Class II-w land to tall fescue and ladino clover in the fall of 1949 on their farm in Lee County, S. C., in the Lynches River Soil Conservation District. They turned the land and planted it to hybrid corn in the spring of 1952, when a similar acreage of hybrid corn was planted on land that had been in oats.

During the severe drought that followed in the summer of 1952, the corn in the grass-based rotation showed no signs of wilting, but the other corn "burned up," they reported. The pay-off came at harvest time when they harvested 72.3 more bushels per acre from the grass-corn rotation than from the oats-corn land.

The effect of the grass-based rotation held over to the following year, when both plots were planted to oats. They harvested 3,686 pounds of oats this year from land that had been in the grass-corn rotation, as compared with 3,032 pounds from the oats-corn land.

DISTRICT PROFILE

IVAN L. BARKLEY of SOUTH DAKOTA

IVAN L. BARKLEY was a conservation pioneer in southwestern South Dakota.

Barkley came to South Dakota 44 years ago. He and his wife homesteaded under the original Homestead Act and proved up two sections. He calls himself "an old prairie dog."

Traveling from Iowa, the Barkley's ran out of money at Ardmore, and, not being able to go further or even back to Iowa, they just stayed. They have gone through the good and the bad years. Through his good management Barkley has won a high prestige and become an outstanding farm leader. For years he has been experimenting with new ideas and fellow settlers have grown accustomed to looking to Ivan for advice and help. If he says a variety is good, or the way to handle hay is thus and thus, or the time to market steers is now, others in the area follow along.

Ivan L. Barkley.

Ivan Barkley had to be a conservationist to get where he is today. On his place, the evidence of conservation is all around you on the 6,000 acres owned and several thousand acres leased.

Ardmore, South Dakota, is in the extreme southwestern corner of the State, where 15 inches of rainfall per year is average. Yet, when you drive off the prairie to the headquarters of the Barkley unit, you find yourself surrounded by trees. Ivan says he planted his first trees in 1920, and 75 percent of them are still alive. In those days he was told that it would be necessary to place rocks around the base of each tree planted on the upland and that during dry seasons the trees would certainly have to be watered. Barkley has proved that trees will grow, and the strong tree program that the Fall River County District is now carrying on can be attributed to his constant encouragement of getting trees established on the plains.

The windbreak trees are planted on contour and terraced. In addition to his regular windbreak trees, he has several varieties of fruits, including some good pears. Barkley has staked out contours and terraces for trees planted by other operators of farms. He might well be called "Caragana" Barkley because of his constant insistence on including caragana shrubs in all plantings. He says they dry up, the hoppers and blister beetles eat them up, the snow breaks them down, but they continue to grow and flourish.

Barkley's unit is in livestock, with some cropland. The latter is contoured to save precious moisture. Grazing management is in effect. There are 22 stockwater dams to distribute grazing, and 10 irrigation dams to provide water for pump and flood irrigation. At the present time Barkley has nearly 200 acres under irrigation for feed production. He has led the way toward alfalfa and wheatgrass mixtures, and he is a strong advocate of sweetclover.

There are four boys and two girls in the family. Two of the boys now have ranches of their own. Ivan has been on the board of supervisors since the organization of his district 12 years ago, and served as chairman for several years. His regular attend-

(Continued on page 119)

Belina's Group

By FRANK D. MARTIN

THE FIRST group of neighbors to get together in the Steele County (Minn.) Soil Conservation District for the purpose of planning soil conservation and applying it on their farms is now called "Belina's planning group."

There were 10 farmers in the original group, and their first meeting was in the fall of 1947.

Three planning meetings were held that first year and a follow-up meeting each succeeding year. The attendance has been 100 percent or more. News of their progress spread. Three more farmers have now joined. One man sold his farm but the new owner entered the group and applied to the district for a farm plan.

Meetings are always organized and called by their leader, Charles Belina. Charles not only is the leader of this group but also chairman of the district supervisors and president of the local chapter of the Izaak Walton League. He is a true conservationist.

The meetings are held at the home of a member. This honor is passed around. The members' wives and children all attend. The women come with baskets filled, and a lunch is always served before a meeting is adjourned. The women and children usually have a social gathering, while the men and older boys carry on the business and discuss their plans for the coming year.

They always ask to see an educational movie or some slides. The women and children enjoy this phase of the program.

Wives and children of the planning group.

Sitting: A. B. Seykora, Adolph Kovar, Joe Pavek, L. A. Wanous, Orlo Sette, Joe Stransky, Gene Deml, and O. A. Risser, farm planner. Standing: William Wanous, Charles Belina, Edwin Tomsicek, and George Belina.

The land in this area is generally flat and in need of tile drainage. At first, on six farms there were no outlet facilities—a problem that had existed for many years. The group discussed their mutual drainage problem at their planning meetings, and asked the farm planner and engineer what could be done about it. It was pointed out to them that a mutual drainage group could be set up, each paying his share toward the cost of a drainage enterprise. This was done and 2 miles of open ditch was constructed which solved a problem that had been a headache for years.

Adolph Kovar, one of the older members of the group, discontinued farming about 3 years ago. He still owns the farm and lives on it, and takes part in all the group meetings. He rented the land to Charles and George Belina and insists that the soil conservation program be carried out exactly as planned. Orlo Sette sold his livestock but is still carrying on a good rotation.

These farmers carry on other group activities also. They are liberal users of commercial fertilizers. This came about partly as a result of good crop rotations and good land use. They were determined to cut the cost of fertilizer, so they arranged to buy it in carload lots. This is distributed among the group. Everytime you visit the neighborhood, you see two or three of the group working together. Three members of the group have a hay chopper and put their hay up together. If they are not haying or harvesting or doing some tiling, the group will be building a machine shed or corncrib on one of the neighbor's farms.

Note.—The author is area conservationist, Soil Conservation Service, Owatonna, Minn.

The Small Watershed Gets Attention

By ERWIN C. FORD

The 83d Congress, in making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1954, approved an item of $5,000,000 under the title "Watershed Protection." The appropriation act describes the purpose of the allotment of $5,000,000 for watershed protection in these words, "For expenses necessary to . . . carry out preventive measures, including, but not limited to, engineering operations, methods of cultivation, the growing of vegetation, and changes in use of land, in accordance with the provisions of Public Law 46, (Public Law 46 is the basic legislation which established the Soil Conservation Service) . . . ."

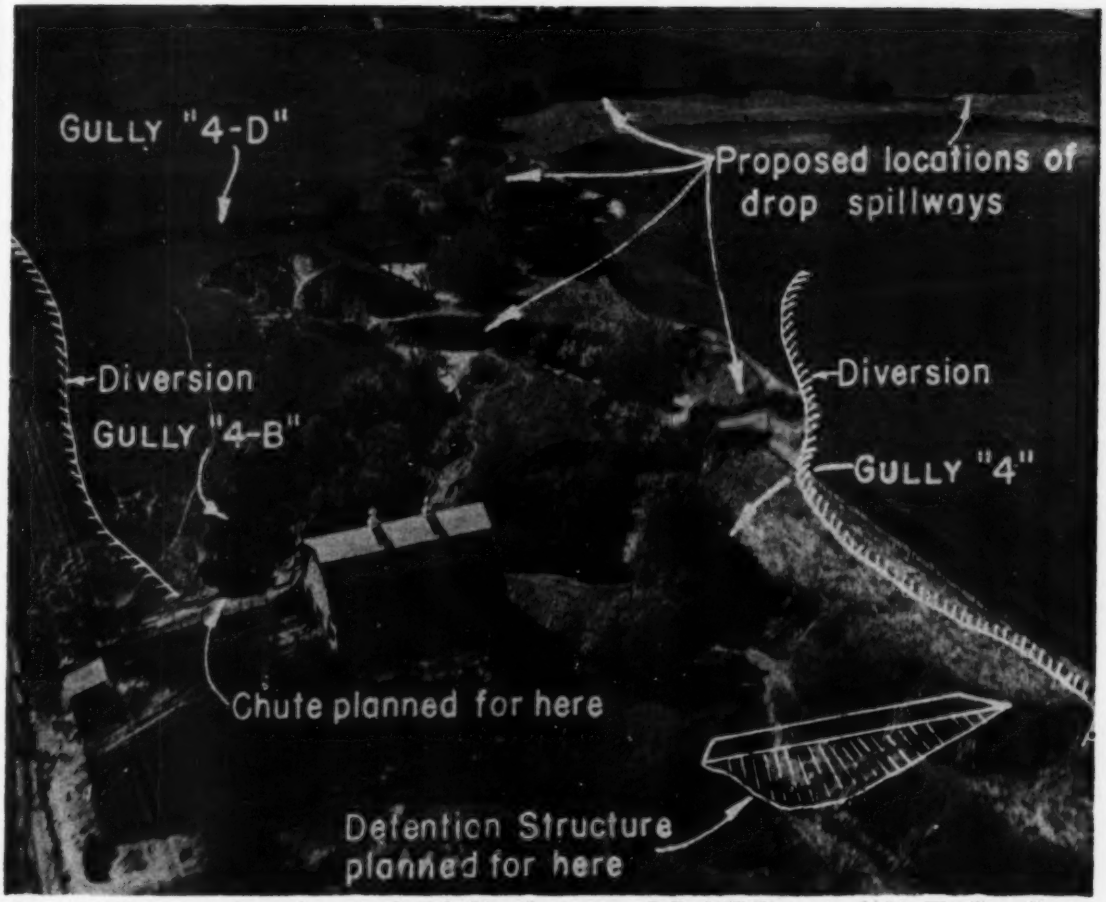
On the floor of Congress, in connection with this appropriation, Congressman H. Carl Andersen said, "This item would provide funds for a program of cooperation with local organizations on some 50 small watersheds in 27 states for the purpose of demonstrating the practicability of complete watershed protection as a means of conserving soil and water resources and alleviating damages from floods, siltation of reservoirs, impairment of stream channels, and related problems. These would be pilot plant watershed projects which could be completed in an average period of 5 years, at a total cost of about $29 million to the Federal Government and approximately an equal cost to the landowners, local organizations, and states. This would be a type of cost-sharing venture—a local-state-Federal partnership in the protection and improvement of our vital natural resources of soil and water."

NOTWITHSTANDING a growing recognition of the close relationship of land and water, there has been a wide gap in correlating the planning for their development, conservation and use.

Two major planning techniques are being widely used today. One is the technique of planning and treating individual farm and ranch units without regard to factors outside ownership boundaries. The other is the multiple-purpose development of water resources by river basins without regard to incidental changes of runoff or sediment production resulting from land use and treatment. Between these two planning concepts there is an important missing link.

We now know a great deal about the relationship of land and water. There is ample evidence of the

Note.—The author is an agricultural economist, Soil Conservation Service, Washington, D. C.



Planning scheme superimposed on air photo looking downstream, Gully 4, Walling watershed in Woodbury County, Iowa. This was in May 1951.

effect of proper use of watershed lands on runoff, sediment production, groundwater supply and other hydrologic factors. These considerations necessarily influence the planning, design, cost and maintenance of major downstream works for river regulation. Downstream river works for power, flood control, irrigation and water supply can add to the acreage and yield of farm lands as well as protect and increase industrial and urban developments.

The present conservation work on individual farms and ranches largely benefits those properties and often is installed with slight regard to what happens elsewhere. Thus, it is thought, we are passing up potential gains that might be realized were watershed protection programs to be accelerated and designed not only to maintain and improve the productivity of individual farms but also to achieve the greatest possible improvement in water and sediment control downstream.

The missing link can be closed through a watershed protection program in which the work on one farm will be related to that on the next and where there is adequate attention to the needs not only of farmers but also to the community, to the urban people and to industries downstream.

The watershed protection demonstration projects will range in size from as little as 12 square miles to as much as several hundred square miles. They comprise a truly community watershed-protection program—a program that local people and their local organizations, such as soil conservation districts, watershed associations, and flood control districts, with assistance and help from State and

EXPLANATION

Hatched areas indicate the 11 authorized flood prevention watersheds.

Black areas (numbered) indicate the watersheds under consideration in fiscal year 1954 under the water protection program. They are as follows—

1. Adobe Creek, Calif.
2. Aiken Watershed, Kans.
3. Baboosic River, N. H.
4. Ball Creek, N. Y.
5. Bill's Creek, Kans.
6. Brownell Creek, Nebr.
7. Buckhorn & South Platte Tribs., Colo.
8. Calaveras Creek, Tex.
9. Calleguas Creek, Calif.
10. Chippewa River Tribs. & Hawk Creek, Minn.
11. Cory Creek, Pa.
12. Cow Bayou, Tex.
13. Dean Creek, N. Y.
14. Double Creek, Okla.
15. Dry Creek, Idaho
16. Dry Creek, Nebr.
17. East Willow Creek, Minn.
18. East Fork of Falling River, Va.
19. East Branch of S. Fork of Blackwater, Mo.
20. Escondido Creek, Tex.
21. Flat Creek, Ind.
22. Floyd River, Tribs. Upper Plymouth Creek and Orange City Watershed, Iowa
23. Great Brook, N. Y.
24. Green Creek, Tex.
25. Hadley Creek, Ill.
26. Honey Creek, Iowa
27. Indian Creek, Nebr.
28. Jack's Run, Pa.
29. Little Delaware — Mission Creek, Kans.
30. Little Hoosick above Berlin, N. Y. and Mass.
31. Lost Creek, Mo.
32. Lost Creek, Kans.
33. Mission Creek, Wash.
34. Money Creek, Ill.
35. Mule Creek, Iowa
36. Muster Creek, Mont.
37. North Fork of the Broad River, Ga.
38. North Fork of the Rough River, Ky.
39. Old Tom Creek, Ill.
40. Pequest above USGS Gaging Station, N. J.
41. Pleasant Creek, Utah
42. Plum Creek, Ky.
43. Red River, Upper, Ky.
44. Rocky Fork—Clear Creek, Ohio
45. Salem Fork of Ten Mile Creek, W. Va.
46. Sandia Mt. Trib.—Bernalillo Watershed, N. Mex.
47. Santaquin, Utah

FLOOD PREVENTION AN
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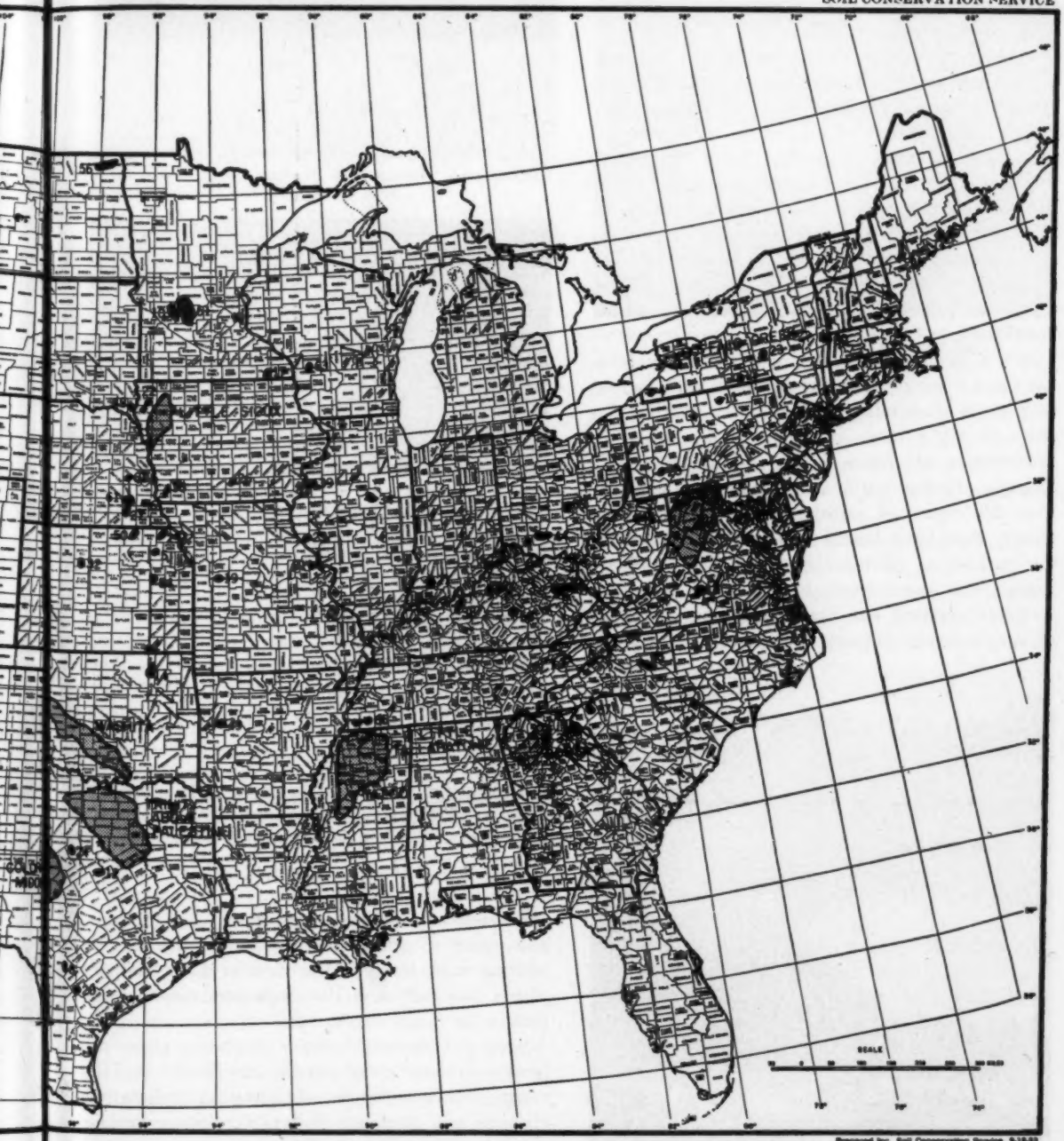
48. Scott Watershed, S. Dak.
49. Six Mile Creek, Ark.
50. Snipe Creek, Kans.
51. South & North Fork of the Crow, Minn.
52. Spring Valley Creek, Wash.
53. Squaw Peak—South Mt., Ariz.
54. Switzler Creek, Kans.
55. Third Creek, N. C.

SOIL CONSERVATION SERVICE



Prepared by: Soil Conservation Service 9-1963

gue River, N. Dak.
elve Mile Creek, S. C.
per Green, Ky.
per Hocking River, in-
ding Hunter's Run, Ohio

60. Upper Hondo, Tribs. of., N. Mex.
61. Upper Salt — Swedeburg Tribs. of Salt Creek, Nebr.
62. Walnut Creek, Calif.
63. West Fork of Kickapoo, Wis.
64. White Tanks, Ariz.
65. Wolf River Tribs.—Mary's & Sand Creeks, Tenn.

Federal agencies, can complete in a relatively short time. Small watersheds are natural planning units which are, we believe, the cornerstone to total river basin development.

In the very beginning of the nationwide program of soil and water conservation, in 1933, the Soil Conservation Service stressed the watershed approach. Its earliest work on demonstration projects was organized along watershed lines. The need for local organization and initiative during the past 20 years led to primary emphasis being placed on the individual-farm approach—the first basis of an action program. As the land treatment job has progressively advanced a renewed interest in the watershed concept has spread widely throughout the Nation.

In the past 5 years scores of watershed associations and other organized groups have been formed to work in cooperation with soil conservation districts for the purpose of achieving soil and water conservation objectives which are not being met through existing national programs. There are some 300 organized associations and 500 informal groups that have bound themselves together for the purpose of solving their watershed problems. Many such associations, together with soil conservation districts and individuals from all walks of life, actively supported the recently launched watershed-protection program. Already, many of these groups are joining in sponsorship of watersheds designated for treatment. The scope and urgency of local interest presents leaders at various levels with a challenge of the first order. Watershed protection now takes on the appearance of a grass-roots movement.

Desilting basin with whistle-pipe dam; Cane Creek watershed, Union County, Miss.

Bank-sloping rip-rap and grading on E. Foss farm, Erie County, N. Y.

Contour farming and level terraces above Detention Reservoir No. 10A, Sandstone Creek, Washita Watershed, Okla. Sweet clover is being used as a cover and soil-building crop on light area in center of picture.

The conservation of the Nation's soil and water resources is a responsibility that rests primarily with farmers and ranchers. The Federal, State, and local governments have a large stake in it and can assist in many ways. Industries, urban areas, service organizations, sportsmen's clubs, and others, are vitally interested and concerned. Yet the work must start at ground level with the custodian of soil and water himself—the one who plows the land, plants and cultivates the crops, and manages the pasture or range and woods.

Sixty-five demonstration watershed projects are being considered which provide a cross-section of the many different types of physical, vegetative, climatic and economic factors present in various sections of the country. Experience argues against trying to develop a detailed plan for a much larger area than that in which a community of interest actuates the people living there. This factor tended

to place a definite limitation upon the size of watersheds selected. Consideration was given to the amount of conservation that had already been completed in the watershed, as well as the interest shown by the local people. Many of the watersheds were chosen because they lay in areas where preliminary surveys showed the need for, and practicability of, watershed protection measures and where it was likely that benefits from the program would exceed its cost.

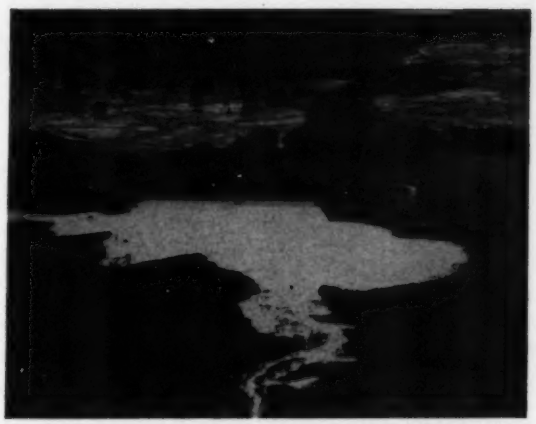
Then too, Congress desired that these watersheds be geographically scattered over the country as an invitation to as many people as possible to participate. Congress wanted the watersheds watched by many people for clues as to possible courses of action on watershed protection in the future.

Sound plans are a prelude to constructive action and the first step in our watershed-protection program will be the preparation of a watershed plan. The local people must have the help of qualified

Stabilizing and sediment-control structure, Nepper watershed, Iowa.

technical help in preparing a plan in each small watershed. All local interests that are concerned will have their opportunity to participate in preparing the watershed plans. These plans will reveal the kinds, quantities and costs of all needed soil and water measures. They will show the specific location of major water-management measures such as floodwater retarding structures and channel improvements.

After preparation and approval of a plan by the Federal, State and local groups designs and specifications for the necessary structural phases of the program are completed. This is followed by appli-



Bottomland protected by reservoir, Canadian-Walnut Soil Conservation District, Purcell, Okla.

cation, installation, or construction of the recommended measures. Then ensues the operation and maintenance of the measures and, finally, the program will be carefully observed as to its effectiveness in accomplishing the objectives of watershed protection.

As indicated already, a successful watershed protection program requires that the people residing in the watershed must assume the principal responsibility. This necessitates the sponsorship of a soil conservation district together with other local, responsible organizations that are representative of the interests involved and which can help in formulating and achieving the best possible program for watershed protection.

It is also mandatory that local interests share a part of the cost. They will be expected to provide all easements and rights-of-way for structural measures, to carry out all of the land treatment practices, and to provide other help comprising altogether about 50 percent of the total cost of the project.

This program is a joint venture. It is intended to enable farmers to work with their neighbors and with residents of cities and towns, and with States and the Federal Government.

Watershed protection work will consist of the application of needed soil and water conservation practices on farm and ranch lands, of adequate protection and management of woodland, and of the installation of such measures as are needed and practicable for reduction of floodwater and sediment damages. There will be floodwater retarding structures, channel improvement, major

Water conservation and flood control dam, Wyoming County, N. Y.

gully control, streambank stabilization, and related measures. Because land and the behavior of water falling on land differs from farm to farm and from watershed to watershed, each watershed and each type of land in every watershed must be planned and dealt with individually. Due to the complexity and magnitude of these differences, no readymade plan or fixed set of practices can be invoked. Out of long years of painstaking research and practical experience, have emerged, however, certain basic treatment measures which can be considered in planning the protection program for each watershed. Some of these have been described by Carl B. Brown in his article, "Flood Prevention Through Watershed Planning," which was published in the March 1953 issue of *Agricultural Engineering*. I quote:

"Measures contributing to watershed protection can be classified in two broad categories. They can be classified in terms of purpose and also in terms of methods and accomplishment. In terms of purpose, there are, first, the land use and treatment measures, which are effective in increasing the infiltration of precipitation and the water-holding capacity of the soil and of preventing soil erosion on watershed lands. They include familiar measures such as contouring, terracing, strip-cropping, grassed waterways, rotations, pasture and woodland improvement, etc. This category also includes watershed-stabilization measures, such as control of gullies by structures or vegetation.

"This group of measures has one distinguishing characteristic, namely, that in most cases the predominant benefits from their use occur on-site, that is, on the fields and farms where they are installed. That is not to say that they may not have a highly significant effect on reduction of flood damages. Often they do, but this is not their major benefit.

"A second category of measures are those planned primarily for the management of waterflow after it has left the fields and farm waterways and reached the small branches and creeks. These measures include floodwater retarding structures, stream-channel improvements to increase carrying capacity and stabilize beds and banks, minor floodways, sediment-detention basins and similar measures. The distinguishing characteristic of this group of measures is that their primary benefits are off-site or downstream, not at the places where they are installed. In this sense, the primary benefits are public, because they accrue to other farmers, towns, roads, etc., downstream from where the measures are installed.

"We can also catalogue measures that aid in flood prevention according to how they can be established or installed. A large part but not all of the land use and treatment measures are of such a nature that farmers and ranches can and will install them on their own land if given an understanding of their value, technical aid in their planning and installation, and some degree of financial assistance.

"Certain of these measures, however, which are needed for stabilization of watershed lands are either too complex for landowners to install, or else the benefits will be so long deferred that it is unreasonable to expect very many farmers to do these jobs. For example, reinforced concrete structures needed to stabilize large gullies, such as occur in western Iowa, require all the elements of planning, design, and supervision of construction that go into a major flood-control dam. The benefits from this type of gully control are primarily to watershed lands that would be destroyed by the headward growth and enlargement of the gullies. And these lands may be on other farms above the present gully head. If economically justified in the public interest, it becomes more efficient and economical for the installations to be made by agencies of government under binding maintenance agreements.

"The measures that are primarily for flood prevention, such as retarding structures and channel improvement, can rarely be installed by individual landowners. They require group action, highly

Part of the 4,700 acres of floodplain on Sandstone Creek, Upper Washita Soil Conservation District, Okla. Permanent pool has 17.8 surface acres, 141 acre-feet; flood pool, 29 surface acres, 253 acre-feet. The total is 394 acre-feet or 5.98 inches of runoff from the 790-acre drainage area.

Air view, Mortenson, Iowa, watershed, shows detention reservoir on main gully. In upper right corner is shown a drop spillway and chute with diversion. On far side of pond is a drop inlet with collecting diversions; on this side, partially seen, is a chute with collecting diversions. Main gully and several laterals have been completely stabilized.

These terraces on Class VI or Class VII land held up despite rains that resulted in worst floods in Kansas history. They are in the Franklin County (Kans.) Soil Conservation District.

skilled technical planning, and corporate or governmental financing."

Among the more important highlights of the program are these:

1. Congress has indicated its intent that this program shall be carried out to (1) provide experience in developing sound procedures for local-state-Federal cooperation in achieving the watershed objectives of local people; and (2) demonstrate the actual physical results of a planned watershed program by determining increased productivity, decreased erosion, decreased floodwater and sediment damages, and other benefits resulting from watershed improvements.
2. This program is a most important step in watershed protection because it is intended to show what can be done.
3. The program will indicate the degree of readiness and willingness of local communities to bear their share of responsibility in the conservation of our natural resources.
4. Small watersheds will provide a means of working out practicable working relationships and procedures by which organized local groups, in cooperation with State and Federal agencies, can carry out planned programs for watershed protection.
5. The program of demonstration projects is designed to point the way to greater results for each dollar expended in our overall conservation effort.
6. The program may disclose effective ways to close the gap between conservation on the land and improvements on the main streams.
7. The demonstrations should bring about a recognition of role of the treatment and management of agricultural and other lands and "little waters" in the upper watersheds in large river basin programs.
8. It is quite possible that the demonstrations will provide the Congress with information that will be helpful in preparing future legislation in this field.

PONDS IN THE VIRGIN ISLANDS. — Water conservation long has been of vital concern in the Virgin Islands. But heavy earth-moving equipment is very limited there.

Most such equipment is owned by the Virgin Islands Corporation, an agency of the Federal Department of the Interior. During the past two years VICORP, through a cooperative arrangement with the two soil conservation districts in the islands, has been making this equipment available to district cooperators in a well-planned water-conservation program.

Because the headquarters of VICORP are on St. Croix, most of the work has been done there. But during the past year, a bulldozer was assigned to St. Thomas and, after the necessary preliminary site surveys were made, a pond of 9 acre-feet capacity was laid off on the farm of S. E. Hartman, a cooperator with the St. Thomas and St. John Soil Conservation District.

Construction began in mid-July and the work was completed late in August—the first earthen-dam pond on the Island. The local SCS technician gave close supervision to construction.

The fact that there had been an almost continuous drought since October 1952 whetted interest in the pond among people living near the site and even to some extent among the townsfolk in Charlotte Amalie. Four days later a heavy 4-hour rainfall filled Hartman's pond to capacity.

The technician was literally swamped with telephone calls after this apparently providential occurrence. He arranged a series of tours from Charlotte Amalie to the Hartman farm, where he explained to a large group how the construction of farm ponds fits in with a soil conservation district program.

Governor Morris F. de Castro, a strong supporter of conservation, gave a full description of this notable event in a radio chat on the night of September 2. The *Daily News*, of Charlotte Amalie, was generous with publicity from the beginning of the pond's construction to its completion, and afterward.

This year there has been a pond-building program under way in St. Croix also, where four more ponds with 36 acre-feet of storage capacity were constructed in August. However, up until September hardly enough rain had fallen to wet the newly exposed surfaces of the storage basins of a large number of ponds in St. Croix built so far in 1953.

Allegany Wipes the Slate Clean

Allegany County Soil Conservation District achieved its impressive record partly through its use of a quarter million dollar fleet of machines and implements.

By BERNHARD A. ROTH

ALLEGANY COUNTY, N. Y., became one of the Nation's few debt-free, equipment-owning soil conservation districts recently, when Director Lester D. Rees deposited a final $1,400 check in the county's treasury at Belmont. The payment wiped the slate entirely clean of a $23,400 advance received early in the district's 13-year career.

From it has grown a quarter-million dollars worth of equipment serving 1,750 farmers. It includes 40 pieces of heavy, earth-moving machinery —trucks, tractors, bulldozers, carryalls, graders, terracers and the like, plus a host of specialty devices, hand- and power-aids and accessories. Housed and maintained in the district sheds, the materiel fits the district to tackle any conservation job. And it's a comforting reserve for whatever public emergency may arise, be it fire, flood, storm or civil defense.

Note.—The author is in the information division, Soil Conservation Service, Upper Darby, Pa.

Effective use of facilities has earned Allegany an enviable record in the annals of the national district movement. Sample accomplishments, to date: over 400 farm ponds built; 13,000 acres reforested; 30,000 acres of woodland improved and protected; 252 miles of diversion ditching; 40 miles of streambank controlled; 60 miles of outlets and farm watercourses established.

The ultimate in skilled machinery management and precise planning was demonstrated by Allegany SCS technicians the summer they qualified for the exclusive "pond-a-day club," a construction pace seldom equaled. There are plenty of maintenance headaches in the district shops, but rust is seldom one of them.

FOREST PLANTING STOCK.—A recent survey of Michigan indicates that there are now over 1,200 seedbeds in the State operated by individuals, the majority of which have been sponsored by local soil conservation districts.

Meadows Improve in Taos Valley

These "blacks" are waiting to be turned into rotation pasture on Yucca B Angus Farm near Taos, N. M.

By PHIL LOVATO

IMPROVED irrigated pastures and the famous native "vega" meadows of the Taos Valley in northern New Mexico are making a strong bid to provide year-round feed and forage for Aberdeen-Angus cattle.

One of the largest outfits of the registered blacks in New Mexico has headquarters on the outskirts of Taos. This outfit, the Yucca B Angus Farm, is run by Sid Johnson and Sam Beimer of Taos. Will James and Daniel Gonzales of the James & Gonzales Company, another Angus outfit, were the first to establish a registered herd in the valley. Vern Sackett of Taos and Kingsbury Pitcher of Arroyo Seco run smaller herds and are making plans to expand. The success of these ranchers may encourage others to obtain better use of the potentially productive sub-irrigated meadows in Taos.

These native meadows have always been considered an important part of the economy of the valley since the first Spanish settlers arrived. El Prado, a village a short distance north of Taos, is Spanish for meadow or pasture land. Down through the years these meadows have furnished grazing in the spring and fall and produced a crop of hay during the summer season while stock grazed in the mountain ranges. Summer grazing areas, however, are being used to full capacity and the search for increased pasture production continues. At present the native meadows in the valley are, at best, covered with bluegrass and white dutch clover. Frequently there is considerable redtop which is not readily grazed by livestock. Sacata ancho, a wide-leaf sedge, and a wire rush predominate when water remains on the meadows too long, and also tends to come into the better land with overgrazing.

Cooperators of the Eastern Taos Soil Conservation District are finding that seeding of new irrigated pastures and reseeding of the native "vegas" with better quality grasses and good pasture management will pay large dividends. A pasture mixture of smooth brome, orchardgrass, meadow fescue, timothy and alsike clover on 13 acres of the Yucca B Farm provides as much grazing for 80 brood cows as 27 acres of adjacent unimproved native meadows.

Sid Johnson, owner, estimates that three 13-acre pastures of improved grasses used on a systematic rotation grazing will carry 100 head throughout the summer grazing season. Encouraged with the

Note.—The author is work unit conservationist, Soil Conservation Service, Taos, N. Mex.

results being obtained, operators of the Yucca B Farm expect to continue improving their valley holdings to eventually carry 300 brood cows.

Areas which have too much water are being drained to permit the better grasses to grow. In parts of their lands in the Colonias Valley where the water supply is short, a large sump, 800 feet long, capable of storing enough of the sub-surface water to irrigate about 100 acres, is being excavated. This acreage will be leveled and seeded to alfalfa for winter use. If results prove favorable other sumps will be built to irrigate additional improved pastures for their blacks.

There are well over 5,000 acres of native meadowland in the immediate vicinity of Taos and their improvement through reseeding to better quality grasses and proper grazing management would increase beef production in the valley, say range men of the Soil Conservation Service. Results being obtained on the Yucca B Farm and on an increasing number of other farms, appear to prove it.

Fewer Thirsty Crops on the Plains

By A. E. McCLYMONDS

LAND under irrigation in the six Northern Great Plains states—Kansas, Nebraska, the Dakotas, Montana and Wyoming—was increased 144,340 acres by soil conservation district cooperators during 1953.

Note.—Until his recent retirement, the author was regional director, Soil Conservation Service, Lincoln, Nebr.

Of this, 81,660 acres are in small projects in which several farmers worked together, and 62,680 acres were developed in the application of conservation plans for individual farms.

This brings to 804,671 acres the total new irrigation developed by soil conservation district cooperators in the region up to the first of this year. Small group jobs accounted for 337,447 acres, and

These potatoes on the Guy D. George farm south of Whitehall, Mont., are on contour and irrigated by overhead sprinkler. Last year production was 618 bushels per acre.

Starting a siphon to irrigate corn on the Lloyd Fishback farm, Harlan County, Nebr.

the application of conservation plans on individual farms accounted for 467,224 acres.

Technicians of the Soil Conservation Service supplied the technical services for both group accomplishments and the development of farm conservation plans. Cooperation from State agencies, such as the Montana Water Board, was received by some of the groups in developing the water supply.

About 16 percent of the new land brought under irrigation resulted from improvements in existing irrigation systems. In some instances it was possible to get water on land that could not be irrigated before the system was revised. In others, the smaller amount of irrigation water needed per acre under the improved system made irrigation water available for more land.

For all other new irrigated land developed by soil conservation district cooperators in the region, the water supply as well as the land had to be developed.

Montana soil conservation district cooperators lead the parade with a total of 368,373 acres of new land brought under irrigation, or nearly half of the region's total. Over three-fourths was by group jobs.

Nebraska's total of 249,956 acres is the second high, all but 1,100 acres of this land being brought under irrigation through the application of individual farm conservation plans.

Wyoming, with a total of 92,699 acres, ranked third. About half of this state's new irrigated land was developed in group jobs.

Kansas is fourth with a total of 68,951 acres of new irrigated land, all of it developed through individual farm conservation plans. South Dakota is fifth with 18,358 acres, of which amout 42 percent was in group jobs. North Dakota has no group jobs in its 6,334-acre total.

Pumping from wells supplied most of the water for the new irrigation developed by district cooperators in Nebraska and Kansas. Streams and storage ponds are the principal sources in the other four states; some is pumped, but most is delivered by gravity flow.

Small irrigation dams built by soil conservation district cooperators in the region total 3,548.

Besides helping district cooperators bring new

land under irrigation, SCS employees helped improve the existing irrigation systems on 75,000 acres in the Northern Great Plains, bringing the total so improved to just under 600,000 acres. This was done in order to conserve soil and water.

Much land leveling, and construction of irrigation structures and supply and field ditches, has been necessary on both the new irrigated land and the land where existing irrigation systems have been improved. Land leveling was done on 50,830 acres in 1952, which brought the aggregate up to 356,000 acres.

STRIPS BOOST PRODUCTION.—When his 30 acres of potatoes produced an average 127 barrels per acre in 1948, Lloyd McKinnon, a farmer of Bridgewater, Maine, wasn't so pleased as you might expect. That was because on one 20-acre hilly field, where the slopes averaged 5 to 12 percent, the yield was only 80 barrels per acre. This land was badly washed and McKinnon had a hunch that he wasn't handling it the right way. So, he asked the Southern Aroostook Soil Conservation District for assistance and became a conservation farmer.

For a cash outlay of $75, McKinnon built 1,700 feet of diversion ditches and 3,100 feet of outlets in the field, planted in contour strips and awaited results.

Part of McKinnon's hill field.

Next year, the average yield on 23 acres jumped to 165 barrels of potatoes per acre. In 1950, on 19.5 acres the harvest was 195.3 barrels per acre—211 barrels on the problem area and 187 in other fields that once were better. In 1951, when the hill field was rented, it yielded about 200 barrels per acre. Last year, on 28 acres of potatoes, McKinnon harvested an average of 125 barrels per acre; 186 on the hill field, 105 on the rest.

Increased production is not limited to potatoes. Oat yields in the strips between potatoes have increased from 35 to 50 bushels per acre. Grass production between potato strips, where there previously had been virtually nothing, is 2½ to 3 tons per acre, yields being at least 25 percent better than in fields planted solidly with these crops.

McKinnon is getting ready to put all his cropland into strips. It means building 1,000 more feet of diversions and 1,900 feet of outlets. Some strips will be on contour, others of even width. "The even width strips," he says, "are easier to rotate and take care of, but do not yield so much as the contour strips."

McKinnon finds that there is less blight in potatoes planted on the contour. He explains it thus: "If a depression is left in rows in even width strips, a heavy shower will cause a slight deposit of silt that clogs the pores of the soil, especially if it is somewhat imperfectly drained. When water stands a few hours in these pockets, and temperatures are favorable, blight develops. We don't have this problem in contour strips. Once in a while there may be a break through a strip, but that doesn't bother me because I well remember the heavy washing I had in my fields when I planted up and down the slopes."

—Hugh F. Eames.

IVAN L. BARKLEY of S. DAK.

(Continued from page 104)

ance at board meetings is almost a religion. He has actually been known to start out for a board meeting a day ahead of time, and because of bad roads, travel several hundred miles detouring through Nebraska and Wyoming and back into South Dakota to be on time the following morning. He has attended State and National Association meetings. For 9 years he has served as county PMA chairman. At one time or another he has also served on about all of the other boards in the county. He is active in supporting a church in his community, and is as proud of organizing and conducting conservation tours through his community as his community is proud to have him.

His slogan regarding trees and conservation in general can be summed up in this way: "I know of nothing that costs so little in time and money, from which you can derive so much pleasure, as a few trees."

—John T. Loucks.

We must give people Truth, which is something more than an assemblage of facts.

We must develop in them a philosophy, if conservation is to be a true mass movement. . . .

We must give them leadership that will develop volunteer leaders at local levels.

We must set up an ethical standard within the body of society that will form a new measurement for social approval.

We must realize that conservation cannot disassociate itself from any of the other social forces moving man in his daily routine.

We must remember that we can do relatively little about managing wildlife unless we can do a great deal about managing man's manipulation of the earth on which all life exists.

—DAN SAULTZ

Missouri Conservation Commission

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Both Land and People are secure in this Protected Watershed